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ABSTRACT

One critical aspect of costing system methodologies is examined: the effects of average costing by course level on program unit cost. The direct costing methodologies used in two costing systems are compared. One is the internally developed Purdue University Cost Study; the other, the NCHEMS Costing and Data Management System. The comparison concerns the direct instructional program unit costs produced by the two systems and does not attempt to compare the two systems generally. The specific issue addressed is the effect that different levels of direct cost aggregation have on student program direct unit costs. The summarized NCHEMS/Purdue cost ratios reflect overall similarities in program direct costs per full-time-equivalent student whether costing on an average cost-per-credit-hour basis by course level (NCHEMS System) or attaching costs to each course and flowing those costs to the programs based upon the program course enrollment (Purdue System). (LBH)

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NCHEMS Costing and Data Management System and the Purdue University Cost Study: A Comparison of Narrowly Defined Direct Costs

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TABLE OF CONTENTS

Page No.

I. Introduction 1

II. Comparison of Direct Costs 1

A. Definition of Direct Cost 3

B. Student Data 4

C. Program Unit Costing Methodology 5

III. Results and Conclusions 6

Figures

Figure 1. Flow of Inputs, Procedures, and Results for the NCHEMS/PURDUE Comparison of Direct Costs 2

Appendices

Appendix A. Introduction to the Purdue University Cost Study 9

Appendix B. Review of the NCHEMS Costing and Data Management System 14

Appendix C. Summary of Direct Cost Ratios by School and Level of Program, West Lafayette Campus 16

NCHEMS COSTING AND DATA MANAGEMENT SYSTEM AND THE PURDUE UNIVERSITY COST STUDY: A COMPARISON OF NARROWLY DEFINED DIRECT COSTS

I. INTRODUCTION

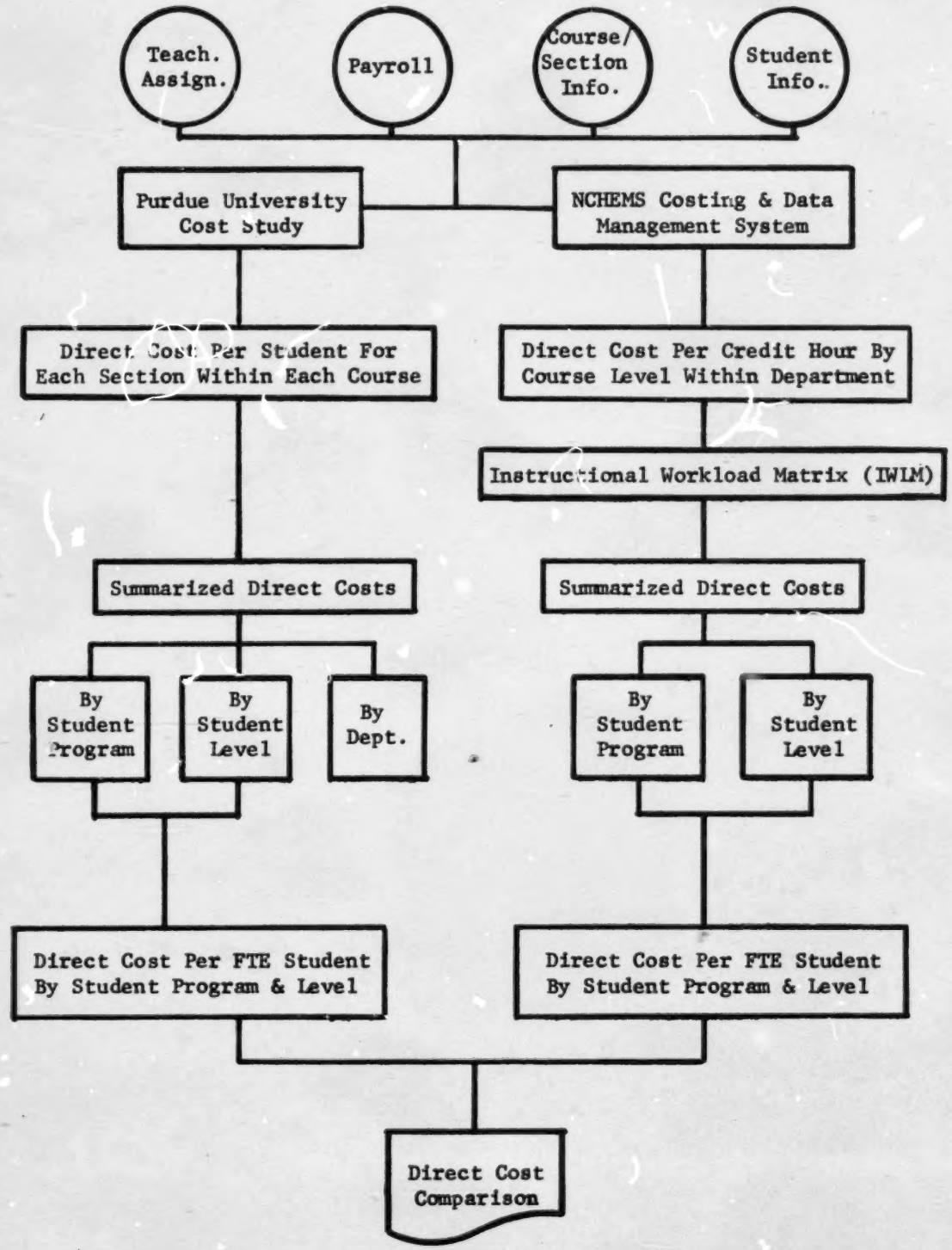
Interest in cost analysis among postsecondary education institutions and various state and federal agencies has increased significantly in recent years. Internally, the managers of postsecondary institutions are recognizing the importance of cost-related information as effective decision tools and as a means of assessing the impact and effect of past institutional resource allocation policies. Lessons learned from such analyses contribute to the formulation of more effective policies and management philosophies. The interest in institutional cost data has intensified among the various external governing agencies which interface with higher education. Pressure is being applied by these various external bodies to postsecondary institutions to produce relevant and comparable cost information.

Considerable controversy remains to be resolved concerning the development of compatible cost standards, methodologies, and procedures as well as the usefulness of cost data. Several organizations have attempted to develop general costing systems; however, the level of acceptance and the number of postsecondary institutions actually using these systems is not known at this time. The National Center for Higher Education Management Systems (NCHEMS) has developed one of the more recent and widely disseminated costing systems, the NCHEMS "Costing and Data Management System." It is beyond the scope of this report to thoroughly examine and comment upon costing system controversies. The objective here is to focus on one critical aspect of costing system methodologies: the effects of average costing by course level on program unit cost. In an article entitled, "Cost Analysis in Postsecondary Education: The Contextual Realities," Ben Lawrence, director of NCHEMS, stated "There is much disagreement about what (costing) techniques should be used." This report explores that topic by comparing the direct costing methodologies utilized in two costing systems; one is the internally developed Purdue University Cost Study while the other is the NCHEMS Costing and Data Management System. Figure 1 graphically describes the two systems' inputs, intermediate steps, and the outputs which were the basis of the comparison. The comparison concerns the direct instructional program unit costs produced by the two systems and does not attempt to compare the two systems generally. While these two costing methodologies are explained in greater detail in the Appendices, the specific issue being examined is the effect that different levels of direct cost aggregation have on student program direct unit costs.

II. COMPARISON OF DIRECT COSTS

Arriving at student program direct costs, using the NCHEMS Costing and Data Management System, involved a somewhat different technique from that used in the Purdue Cost Study. The Purdue Cost Study was specifically developed for use at Purdue University and contains many procedures

Flow of Inputs, Procedures, and Results for the
NCHEMS/PURDUE Comparison of Direct Costs


Teach. Assign.
Payroll
Course/ Section Info.
Student Info..
Purdue University Cost Study
NCHEMS Costing & Data Management System
Direct Cost Per Student For Each Section Within Each Course
Direct Cost Per Credit Hour By Course Level Within Department
Instructional Workload Matrix (IWLM)
Summarized Direct Costs
Summarized Direct Costs
By Student Program
By Student Level
By Dept.
By Student Program
By Student Level
Direct Cost Per FTE Student By Student Program & Level
Direct Cost Per FTE Student By Student Program & Level
Direct Cost Comparison

that are linked closely to that institution's organizational and financial structure as well as its unique data base. As a result, the specific procedures and mechanics inherent in the Purdue Cost Study would be inapplicable at other institutions. However, the basic concept and philosophy underlying the Purdue approach, particularly costing by course rather than by aggregated course level, is transferable and may be implemented at any institution.

In contrast, the NCHEMS Costing and Data Management System was specifically designed for widespread implementation and therefore exhibits a degree of flexibility not found in the Purdue Costing System. The Information Exchange Procedure (IEP) guidelines emphasize the importance of interinstitutional cost comparisons at the possible expense of internal management utility. A recent document issued by the National Association of College and University Business Officers (NACUBO) entitled "Fundamental Considerations for Determining Cost Information in Higher Education" states that it may not be possible to produce costs which simultaneously satisfy both internal and external requirements. To quote directly from the paper, "It is essential that the purpose of obtaining cost information be identified at the outset in order that appropriate definitions and methods of costing can be selected."

In general terms, the Purdue Cost Study attaches actual teacher compensation costs directly to each specific section of every course taught within a given operating period (summer session, fall semester, spring semester) for the fiscal year and proportionally flows those costs back to the various student programs enrolled in each section on the basis of actual enrollments. Within the NCHEMS system instructional costs are attached to course levels (lower division, upper division, etc.) rather than to specific courses and then flowed back to the student programs via the Instructional Workload Matrix (IWLM) established for one semester or quarter.

Purdue University was interested in the student program cost differences that would arise using the two costing methodologies. It would have been meaningless to compare the cost outputs of the NCHEMS system developed under the standard IEP guidelines with the Purdue Cost Study outputs since the two systems are fundamentally different. Given the flexibility of the NCHEMS system, it made more sense to apply a subset of definitions and guidelines to the NCHEMS system that paralleled those of the Purdue Cost Study. In this way as many variables as possible were normalized so that the comparison would highlight differences in the costing processes and their effect on program costs. Only student program direct costs were compared since full costing involves a number of subjective and arbitrary decisions which would have made the comparison exceedingly more difficult. Perhaps such a study can be made in the future after full costing procedures are refined and general agreement is reached with regard to standards and procedures. The nomenclature and procedural guidelines upon which this comparison was constructed are presented below.

A. <u>DEFINITION OF DIRECT COST</u>:

The comparison dealt only with direct instructional costs, that is the compensation dollars attached to teaching activities during the 1972/73 fiscal year. The Information Exchange Procedures option of conducting a faculty activity analysis for one operating period and assuming the results are representative of the entire fiscal year was not used. Purdue conducts a complete faculty activity survey each

semester and summer session and distributes an individual's compensation across his various reported activities for that period. These costs are then accummulated by operating period for the fiscal year.

The Purdue Cost Study system and the NCHEMS system both utilized the same set of activity data and compensation dollars for teaching activities. The NCHEMS Faculty Activity Module was not used in this study.

Direct Cost was more narrowly defined in this cost study comparison than in the Information Exchange Procedures guidelines. There were two reasons for adopting this direct cost definition. First, the Purdue Cost Study uses only the instructional compensation dollars assigned to teaching activities as its direct instructional cost definition. Secondly, adopting this definition within the NCHEMS system ensured a compatible direct cost base while avoiding the use of the Account Crossover Module in the comparison study. All the direct instructional costs for the NCHEMS cost study were available from the Personnel Data Module.

B. STUDENT DATA:

There were three main components comprising the student data. These elements are described below:

1. Student Programs - Since the final cost outputs would be at this level, it was necessary to identify the field-of-study (major) that each student was pursuing. HEGIS codes were not used to identify programs. Instead, the internal Purdue program-of-study codes were utilized.

2. Student Level: The Purdue Cost Study identifies eight (8) student levels within each student program (although all eight may not appear). These are freshman, sophomore, junior, senior, first professional, masters, intermediate, and doctoral. This same level of detail was maintained within the NCHEMS system.

3. Course Information: The Purdue Cost Study maintains the student data in a form which shows the student programs (and student levels within programs) enrolled in each unique course along with the credit hours associated with each program and student level within each course.

To test the differences that can occur in direct costs when course information is assembled in a more aggregated form, the student data flowing into the NCHEMS Student Data Module was aggregated by course level within each academic department rather than maintaining each unique course as a discrete, identifiable entity. There were four course levels used within the NCHEMS system: (1) lower division undergraduate; (2) upper division undergraduate; (3) dual level (courses taken by both undergraduate and graduate students); and (4) graduate level.

As stated previously, the major objective of this Purdue/NCHEMS comparison was to examine possible cost differences that can occur when costing by course level (NCHEMS) as opposed to costing by each unique

course (Purdue). With the Purdue Cost Study student/course relationship being maintained at a greater level of detail, relative to the NCHEMS system, resulting differences in student program costs between the two systems could, at least in part, be attributed to this difference in technique. This cost data would provide some insight into the level-of-aggregation issue in cost studies. For example, does the precision and accuracy inherent in a detailed approach significantly contribute to, or result in, better information.

C. PROGRAM UNIT COSTING METHODOLOGY:

The Purdue/NCHEMS cost study comparison was designed to examine the effects on student program unit direct costs resulting when two different costing techniques are used. The Purdue Cost Study methodology differs significantly from the NCHEMS costing process in the manner that direct costs are developed for each student program. Within the Purdue Cost Study system, once the direct instructional costs are attached to each unique section (course), these costs flow back to the student programs on the basis of course enrollments. The student programs enrolled in a particular course share the course's cost in proportion to their fraction of the total enrollment in the section. 1/ Thus, the direct cost of a student program within the Purdue Cost Study system depends upon the following three factors:

1. The courses in which the students in that program are enrolled.

2. The direct instructional costs for the courses in which the students in that program are enrolled.

3. Course enrollments from that program.

Despite the fact that the NCHEMS Costing and Data Management System provides the user with the capability of combining data at various levels of detail, the costing methodology employed within the system is fixed. Assuming that the reader is familiar with the basic costing procedures inherent in the NCHEMS system, it is sufficient to say that the NCHEMS costing system employs the Instructional Workload Matrix (IWLM) and the average cost per credit hour within each instructional area. 2/Student program credit hour loads by course level are critical costing elements in the NCHEMS system while actual program/course enrollments represent the critical variables in the Purdue system. For comparison purposes, the program costs generated by the NCHEMS system were calculated on a "per FTE student" basis rather than the usual "cost per credit hour". Once the student program direct cost per FTE student was computed, these values were compared with the figures produced in the Purdue Cost Study. The results of this comparison are discussed in the next section.

1/ Refer to Appendix A for a more detailed explanation of the Purdue Cost Study.

2/ Appendix B contains more detailed information concerning the NCHEMS system.

III. RESULTS AND CONCLUSIONS

Approximately 150 student programs were compared in the Purdue/NCHEMS cost comparison study for fiscal year 1972/73. The actual number of separate comparisons of programs was actually much larger than this because most programs contain various student levels (freshman, sophomore, etc.). The basic procedure used in the comparison involved ratio analysis.

The direct cost per FTE student for each level ed within each program in the NCHEMS cost study was divided by the dire cost per FTE student for the same program and level in the Purdue Cost Study producing the following ratio:

$$\text{NCHEMS/PURDUE RATIO} = \frac{\text{NCHEMS PROGRAM DIRECT COST PER FTE STUDENT}}{\text{PURDUE PROGRAM DIRECT COST PER FTE STUDENT}}$$

A relative statistic, such as this ratio, was deemed more appropriate for comparison purposes than the absolute dollar differences between the program costs generated by the two cost systems.

After examining the ratios generated for each student program, the data from both studies were aggregated into the more manageable school categories for analysis purposes. A review of the original ratios revealed that the majority were in the vicinity of the 0.9 to 1.1 mark. Therefore, ratios developed from the summarized school data were compared with no apparent loss in validity.

As indicated in the summary in Appendix C, the NCHEMS cost study tended to calculate a direct cost per FTE student that was slightly above the Purdue cost study value for all undergraduate programs of study (ratio of 1.04 to 1.00). The graduate programs tended to generate lower direct costs per FTE student in the NCHEMS costing system as compared with the Purdue costing system (.98 to 1.00). Yet, the ratios do demonstrate a close similarity between the direct costs produced under both costing systems.

Apparently, there is a smoothing effect that occurs when direct costs per credit hour are calculated by course level and flow back to the student programs via the IWIM in the NCHEMS system. The averaging of departmental costs per credit hour by course level certainly contributes to this effect. Also, Purdue undergraduate and graduate students share a common course level (called dual level). Average per credit hour costs computed for this level are probably too high with respect to the undergraduate students and perhaps, although unlikely, too low for the graduate students. Costing on an average basis by course level appears to account for the somewhat higher undergraduate program costs and the slightly lower graduate program costs produced by the NCHEMS system as compared to the Purdue system.

Undoubtedly, the common derivation of instructional activities and compensation and the narrow definition of direct cost adopted for this cost study comparison are partially responsible for the closeness of the program

direct cost values in the two cost studies. If the IEP definition of direct cost,3/ a much more comprehensive definition, had been used in this study the program cost differences would have been more pronounced. When the direct cost in instructional areas encompasses more than just the compensation directly attributable to the activities in those areas, differences in costs can occur due to the various assumptions and procedures used to attach direct "support" costs to the instructional activities. This is particularly relevant when interinstitutional program cost comparisons are undertaken.

The major results and conclusions of the NCHEMS/Purdue Cost Study Comparison are as follow:

1. The summarized NCHEMS/Purdue cost ratios in Appendix C reflect overall similarities in program direct costs per FTE student whether costing on an average cost per credit hour basis by course level (NCHEMS System) or attaching costs to each course and flowing those costs to the programs based upon the program course enrollment (Purdue System).

2. Direct cost variations for specific individual programs are substantial when comparing the NCHEMS System to the Purdue System. Still, 46 percent of all undergraduate programs and 41 percent of all graduate programs (which together represented the great majority of direct costs) resulted in NCHEMS/Purdue ratios of between 0.9 and 1.1. Variations may be attributed to data problems and fundamental differences in methodology.

3. It is clear from items 1 and 2 that the more aggregated the programs and analysis the more similar the results.

4. The closeness of the program direct cost per FTE student between the two cost studies was enhanced by the narrow definition of direct cost and by the common inputs with regard to teaching activities and related costs.

5. At Purdue University costing methodologies which attach instructional costs to course levels as opposed to individual courses tend to result in program costs that are comparatively higher in the undergraduate program areas and comparatively lower in the graduate program areas. This is due at least in part to the inclusion of Purdue's dual level.

6. At institutions where course level is not completely indicative of student level and where any given course level can contain heterogeneous mixtures of student levels (e.g., Purdue's dual level for both undergraduate and graduate students) different direct costs will result from a course-level oriented distribution methodology (NCHEMS System) as compared to a methodology dependent upon each individual course (Purdue System). The magnitude of the difference may or may not be significant depending upon the extent of these practices and related course organization policies.

3/ The IEP definition of direct cost includes compensation, supplies and services, travel expenditures, and non-capital equipment expenditures.

7. There is a definite tradeoff evident from the NCHEMS/Purdue direct cost comparison. The NCHEMS Costing and Data Management System offers versatility, processing ease, and comparability; however, given the set of conventions within which this study was conducted, the results from the Purdue System are more appropriate for internal planning and decision-making purposes because they more accurately reflect the actual costs incurred. It should be noted that the NCHEMS System can accept and process data on the same level of detail as that used in the Purdue System and under those circumstances the results should be very similar.

This paper has dealt with only a very small portion of the total cost study controversy prevalent in higher education. It is hoped that it has contributed in a positive way to the pool of available knowledge with regard to cost studies and their application to higher education.

APPENDIX A.

INTRODUCTION TO THE PURDUE UNIVERSITY COST STUDY

Purdue University has conducted cost studies continuously since the 1950's. The initial impetus for these studies was a 1949 legislative mandate which required all publicly-supported institutions of higher learning within the State of Indiana to submit unit cost information to the State Legislature and the Budget Agency. The information was instrumental in determining each institution's share of the total appropriation for higher education until 1966.

The 1967 Legislature shifted to a program budget approach for the 1967-69 biennium. Cost studies were no longer in vogue for state budgeting purposes and, since they were seldom used for internal management purposes, they were discontinued or deemphasized.

Contrary to the general trend the Purdue Cost Study has been expanded and refined over the past eight years to the point where it yields unit costs by student program and student classification. The unit is either headcount student or FTE student and the cost is cost to the state (appropriations), cost to the student (student fees and tuition), or total cost - defined within the Purdue study as the sum of cost to the state and cost to the student.

A PURDUE UNIVERSITY DEFINITION OF DIRECT COST

Direct cost, as defined within the Purdue Cost System, consists only of salaries and benefits paid to teachers, i.e., those persons in direct instructional contact with students. The instructional effort is extremely labor intensive and typically accounts for 60 to 90 percent of total general fund expenditures incurred in academic departments at Purdue University. These costs, although exclusive of support and capital expenditures, clearly are the most significant single ingredient of any conceivable program cost analysis.

B. DIRECT COST PER COURSE

The direct cost of teaching may be built up in several different ways and in varying levels of detail and aggregation. The Purdue System builds up costs from the most fundamental relationships between the student and the teacher - the section (or class).

The identity of the teacher, and hence his compensation, is associated with every section of every course taught at Purdue University. This suggests a lot of nonproductive detail, but the process is quite simple, completely automated, and the result is a precise direct cost for each section. Accumulated section costs yield total direct costs for each course. The following steps explain how the process works:

1. Identification of the course by the faculty of the school within which it is offered. Assume the School of Mechanical

Engineering and a course known as ME 250 which has an official catalog description of 3 weekly class hours and 4 weekly laboratory hours for which 5 collegiate credits are granted upon successful completion by the student.

2. The instructional modes must be established. From the catalog description and input from the School of Mechanical Engineering it is determined that the total 3 weekly class hours is composed of 2 weekly hours of lecture and 1 weekly hour of recitation. The 4 weekly laboratory hours are made up of 3 weekly hours of laboratory and 1 weekly hour of laboratory demonstration.

3. The course master FTE Staff requirements may now be established by the Head of the School of Mechanical Engineering for each instructional mode associated with ME 250 as per the following table.

Course Master - School of Mechanical Engineering

Course I.D.	Instructional Mode	Contact Hrs. per Week	FTE Staff per Section*	Enrollment**
ME 250	LECTURE	2.00	.20	
	RECITATION	1.00	.10	
	LABORATORY	3.00	.15	
	LAB DEMO	1.00	.05	

* Represents the School Head's staffing policy.

** Enrollment is determined by interfacing with the Registrar's records at a set time each semester. Enrollment is constant over all Instructional Modes within a given Course I.D. For example, if a student enrolls in the course he must take all of the various types of classes associated with that course.

4. When ME 250 is actually taught the class organization information described below is a product of the normal registration and scheduling process.

Class Organization - School of Mechanical Engineering

Course I.D.	Instructional Mode	Section Number	Section Enrollment	Teacher I.D.
ME 250	LECTURE	1	100	William Black
	RECITATION	1	25	James White
		2	25	James White
		3	25	Joe Green
		4	25	Joe Green
	LABORATORY	1	20	James White
		2	20	James White
		3	20	Joe Green
		4	20	Joe Green
		5	20	James White
	LAB DEMO	1	50	William Black
		2	50	William Black

5. Given the Teacher I.D. (which is converted from name to employee identification number within the system) payroll information such as account, rank, earnings, and fringe benefits can be obtained. An important control statistic, FTE Staff, is calculated for each individual/account combination from the accumulated earnings for the semester.

Fall Semester Payroll Information - School of Mechanical Engr.

Name	Social Security No.	Account	Rank	Compensation Earnings	Compensation Benefits	FTE Staff
Wm. Black	999-99-0001	10-1288	Prof	$ 6,000	$1,200	0.60
Wm. Black	999-99-0001	50-1288	Prof	4,000	800	0.40
Individual Total for Semester				$10,000	$2,000	1.00
Joe Green	999-99-0002	10-1288	Assoc Prof	$ 8,000	$1,600	1.00
Jas. White	999-99-0003	10-1288	Asst Prof	$ 4,500	$ 900	0.75
Jas. White	999-99-0003	50-1288	Asst Prof	1,500	300	0.25
Individual Total for Semester				$ 6,000	$1,200	1.00

6. All the information necessary to connect direct dollars and sections taught has been created. The key to this process is the FTE Staff per Section statistic placed on each instructional mode in step #3 and the total compensation established in step #5. The following table summarizes the results of this process.

Associating Direct Dollars with Sections Taught

Course I.D.	Instructional Mode	Teacher I.D.	Number of Sections Taught	FTE Staff per Section	Total Compensation	Direct Cost
ME 250	LECTURE	Black	1.0	.20	$12,000	$2,400
	RECITATION	Green	2.0	.10	9,600	1,920
		White	2.0	.10	7,200	1,440
	LABORATORY	Green	2.0	.15	9,600	2,880
		White	3.0	.15	7,200	3,240
	LAB DEMO	Black	2.0	.05	12,000	1,200
Total Direct Cost of ME 250 for Fall Semester						$13,080

7. Thus, the total direct cost per course is merely the summation of the costs per section, or $13,080 for the ME 250 example.

C. DIRECT COST PER STUDENT

Every course taught within the Purdue System has its own, usually unique, mix of students. This mix is most easily conceptualized as a two-dimensional matrix with the rows representing student programs (Mechanical Engineering, Civil Engineering, Nuclear Engineering, etc.) and the columns defining student classifications (Freshman, Sophomore, etc.). The matrix for the example course, ME 250, appears below.

Program/Classification Matrix for ME 250

Student Program	Student Classification (Level) Freshman	Sophomore	Junior	Senior	Total
			-Enrollments-		
Aeronautical Engr.	5	5			10
Civil Engineering	5	10			15
Electrical Engr.	10	5	5		20
Mechanical Engr.	45	5			50
Physics	—	—	3	2	5
Totals	65	25	8	2	100

Given the above relationship between the course and the students and the relationship previously developed between the course and direct dollars it is a straightforward procedure to now relate dollars to students. This is accomplished by means of the common interface - the course - and a simple ratioing technique. For example, Aeronautical Engineering Freshmen would incur total direct cost of $654 (5/100 x $13,080). Mechanical Engineering Freshmen generate $5,886 (45/100 x $13,080) of total direct costs. The direct cost per unit would be the same for all programs and classification, i.e., cells within the matrix. Possible units could be credit hours, contact hours, or course enrollments. The Program/Classification Matrix and associated total direct costs for each cell would appear thus:

Program/Classification Matrix for ME 250

	Student Classification				
Student Program	Freshman	Sophomore	Junior	Senior	Total
			- Direct Cost -		
Aeronautical Engr.	$ 654	$ 654	$	$	$ 1,308
Civil Engineering	654	1,308			1,962
Electrical Engr.	1,308	654	654		2,616
Mechanical Engr.	5,886	654			6,540
Physics			392	262	654
Totals	$8,502	$3,270	$1,046	$262	$13,080

The above table displays the direct cost contribution to various programs and classifications associated with the course ME 250. Contributions to the same program and levels originating with other courses must be accumulated before total direct costs by student program, or by student classification, are known. The total direct cost by program and classification divided by headcount or FTE students for the same program-classification set yields unit direct costs. These unit costs are the objective of the direct cost study conducted at Purdue University.

APPENDIX B.

The NCHEMS Costing and Data Management System is a computer software package consisting of six modules designed to process the student, personnel, and financial data for an institution to produce cost information and student outcomes data. Rather than getting involved in a lengthy discussion of the internal workings of this system (which would go beyond the intended purpose of this report), the interested reader is urged to refer to the NCHEMS documents listed below:

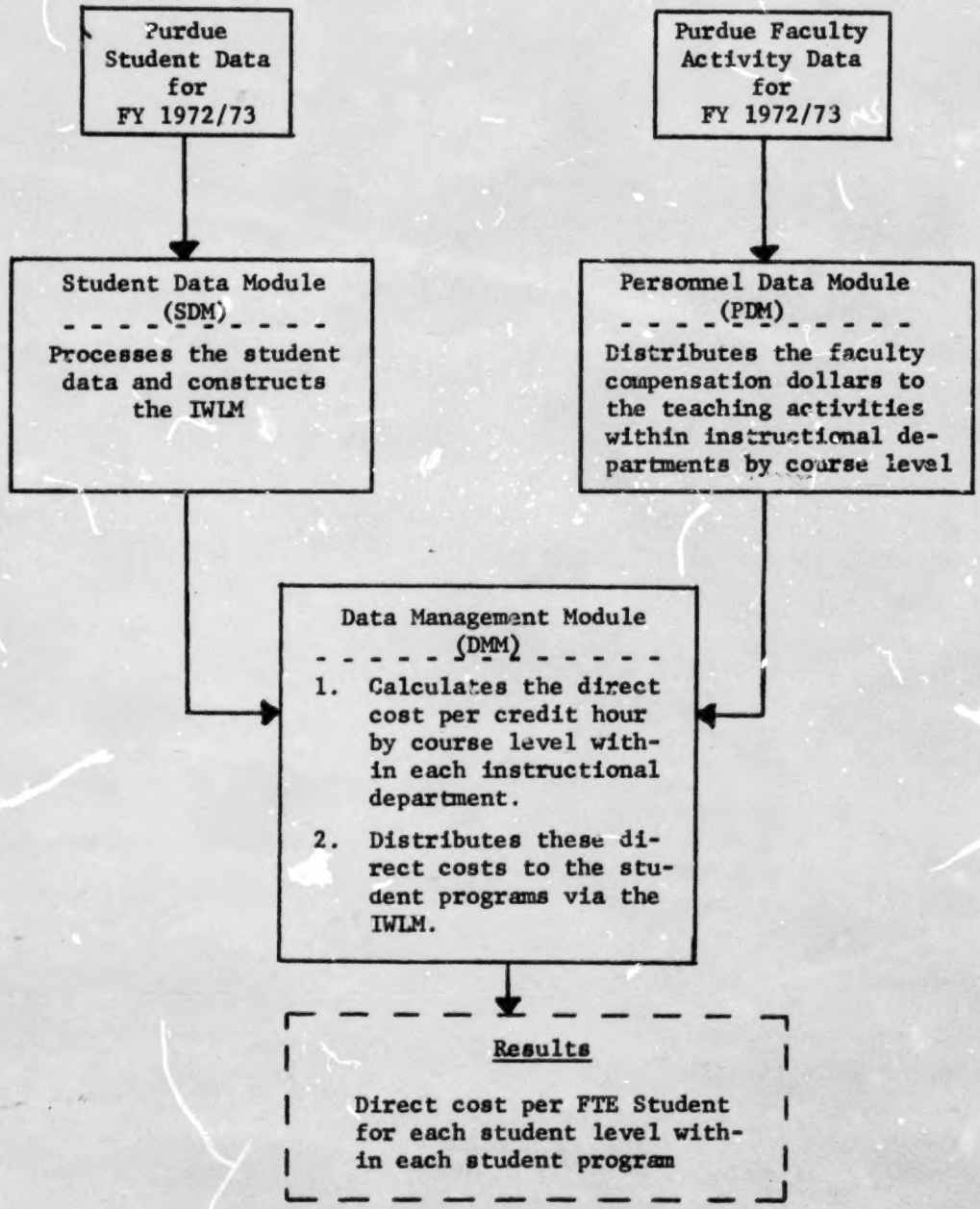
An Introduction to the NCHEMS Costing and Data Management System, Technical Report No. 55

Information Exchange Procedures Activity Structure, Technical Report No. 63

Information Exchange Procedures Cost Study Procedures, Technical Report No. 65

As indicated earlier in this report, there were a number of intentional deviations from the IEP guidelines in developing the direct costs for the comparison with the Purdue Cost Study. Since the direct cost definition adopted for the comparison included only the instructional compensation directly attributable to teaching activities, the Account Crossover Module was not necessary. In fact, for the comparison, only three of the six NCHEMS software modules were needed to develop the student program direct costs. The flowchart on the following page outlines the basic procedures used to develop the direct cost per FTE student for each student program.

DEVELOPMENT OF DIRECT COSTS
WITHIN THE NCHEMS SYSTEM


Purdue Student Data for FY 1972/73
Purdue Faculty Activity Data for FY 1972/73
Student Data Module (SDM)
Processes the student data and constructs the IWLM
Personnel Data Module (PDM)
Distributes the faculty compensation dollars to the teaching activities within instructional departments by course level
Data Management Module (DMM)
1. Calculates the direct cost per credit hour by course level within each instructional department.
2. Distributes these direct costs to the student programs via the IWLM.
Results
Direct cost per FTE Student for each student level within each student program

APPENDIX C.

Summary of Direct Cost Ratios by School and Level of Program
West Lafayette Campus

SCHOOL OF AGRICULTURE	FTE STUDENTS	NCHEMS/PURDUE RATIO
Undergraduate Programs	2,600.9	1.09
Graduate Programs	561.1	0.97
SCHOOL OF HOME ECONOMICS		
Undergraduate Programs	1,407.4	1.13
Graduate Programs	78.9	0.96
SCHOOLS OF ENGINEERING		
Undergraduate Programs	3,972.6	1.05
Graduate Programs	824.7	0.97
SCHOOL OF INDUSTRIAL MANAGEMENT		
Undergraduate Programs	1,662.6	1.16
Graduate Programs	338.9	1.03
SCHOOL OF PHARMACY		
Undergraduate Programs	651.4	0.97
Graduate Programs	154.2	0.93
SCHOOL OF HUMANITIES, SOC SCI & ED		
Undergraduate Programs	4,719.8	1.01
Graduate Programs	1,366.4	0.96
SCHOOL OF SCIENCE		
Undergraduate Programs	2,911.1	0.96
Graduate Programs	1,020.5	0.97
SCHOOL OF TECHNOLOGY		
Undergraduate Programs	1,534.4	1.12
Graduate Programs	38.1	1.08
SCHOOL OF VETERINARY MEDICINE		
Professional Programs	250.4	1.06
Graduate Programs	38.4	1.02
ALL UNDERGRADUATE PROGRAMS	19,460.2	1.04
ALL GRADUATE PROGRAMS*	4,671.6	0.98

* Includes the Veterinary Medicine professional program.